## REMARKS/ARGUMENTS

Claims 1, 9-13, 17-19, and 65 have been resubmitted. Claim 1 has been amended. Claim 2 is currently canceled and Claims 3-8, 14-16, and 20-64 were previously canceled without prejudice or disclaimer of subject matter. No new claims are added.

Claims 1-2, 10-13, and 17-19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Say et al. (US 6,063,343) in view of Shiga et al. (JP 2002238981 A). Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Say et al. in view of Shiga et al., and further in view of Ogata et al. (US 6,531,100). Claim 65 was rejected under 35 U.S.C. 103(a) as being unpatentable over Say et al. in view of Shiga et al.

Claim Amendments

Independent claim 1 is amended to define a system having "first and second discrete adsorbent units; wherein said first adsorbent unit includes a first adsorbent material having a first isotherm curve for said pollutant, said first adsorbent unit being in flow communication with said interior air space having said pollutant;...wherein said at least one photocatalytic oxidation unit is spaced from and located downstream from said first adsorbent unit and spaced from and located upstream from the second adsorbent unit" These features are described in the originally filed specification in paragraph [0040] and shown in Figures 5 and 7A.

Say et al. (US 6,063,343)

Say et al. discloses a photocatalytic fluid purification system which may embody a so-called adsorbent "buffer" positioned upstream from photocatalytic units. Say et al. also discloses that there maybe some advantage to using a

post-filter downstream from the catalytic units. A possible configuration for the post-filter is described as an "adsorbent bed" adapted to perform capture of conversion products of photocatalyzed reactions. Subassemblies of the system may be collectively installed in parallel or series so that they can be easily replaced as needed.

Shiga et al. (JP 2002238981 A)

Shiga et al. discloses a photocatalytic fluid purification system having a downstream portion. The downstream portion of the photocatalytic filter unit is designed to provide adsorption of the oxidation products emitted from the upstream portion of the photocatalytic unit. The downstream portion "contains at least one sort of zeolite, activated carbon, and silica gel". Shiga et al., paragraph 7, line 9. "The output by which is generated in the oxidative degradation by titanium oxide is adsorbed and removed by the hydrophobic zeolite". Shiga et al., paragraph 16, lines 11-13.

While Say et al. may disclose a possible presence of adsorbent units on an upstream and a downstream side of a photocatalytic unit, Say et al. does not disclose that two adsorbent units are adapted to adsorb the same pollutant (i.e. the "interior air space having said pollutant"). To the contrary, Say et al. discloses that a first adsorbent buffer is provided for an initially introduced pollutant and a second or downstream adsorbent bed is provided to capture a different pollutant (i.e., "the conversion products of the photocatalyzed reactions" ,See column 7, line 31-32). The Examiner admits that Say et al. fails to disclose that the two adsorbents are adapted to adsorb the same pollutant, Office Action, page 3, paragraph 3. However, Examiner asserts that Shiga et al. provides this teaching.

While Shiga et al. discloses the presence of an adsorbent material on a downstream side of a photocatalytic unit, it does not have an upstream filter to adsorb the pollutant in the interior space nor does it disclose that the downstream adsorbent unit is adapted to adsorb the pollutant in the interior space. To the contrary, Shiga et al. discloses having a particulate upstream filter unit and a downstream portion of the photocatalytic filter unit to capture "the output by which is generated in the oxidative degradation by titanium oxide" (See Shiga et al., paragraph 16, lines 11-13), a different pollutant than that which is currently claimed.

Claim 1, on the other hand, defines a system "wherein said at least one air cleaner unit comprises: at least one photocatalytic oxidation unit[[s]]; and first and second discrete adsorbent units; wherein the first adsorbent unit includes a first adsorbent material having a first isotherm curve for [a] pollutant, said first adsorbent unit being in flow communication with said interior air space having said pollutant, wherein the second adsorbent unit includes a second adsorbent material having a second isotherm curve for said pollutant [and] wherein said second isotherm curve is steeper than said first isotherm curve; wherein said at least one photocatalytic oxidation unit is spaced from and located downstream from said first adsorbent unit and spaced from and located upstream from the second adsorbent unit"

Say et al. does not teach use of a first and a second adsorbent unit for adsorption of the same pollutant, the pollutant in the interior space, with a "photocatalytic oxidation unit spaced from and located downstream from said first adsorbent unit and spaced from and located upstream from the second adsorbent unit". Furthermore, Say et al, does not teach or suggest use of different adsorbent materials in different adsorbent units with steeper isotherm

curves for adsorbing a pollutant at two different concentrations of the pollutant as currently claimed.

Shiga et al. fails to cure the deficiencies of Say et al. Shiga et al. fails to disclose a first adsorbent material entirely and only discloses an adsorbent material in the downstream portion of the photocatalytic unit. Additionally, like Say et al., the adsorbent material in the downstream portion of the photocatalytic unit is adapted to adsorb the oxidation products from the photocatalytic unit rather than the pollutant in the interior space, as currently claimed. As is known in the art, zeolites, activated carbon, and silica gels can be designed and/or combined to provide a desired characteristic. In Shiga et al., that desired characteristic is to provide a downstream portion of the photocatalytic unit for filtering out the products of oxidation of the photocatalytic unit as opposed to adsorbing the pollutant in the interior space as claimed.

Furthermore, like Say et al, Shiga et al. does not teach or suggest discrete and spaced units having adsorbent materials with steeper isotherm curves for adsorbing a pollutant at two different concentrations of the pollutant as currently claimed. In fact, Shiga et al. teaches a single support material having a first portion functioning as a photocatalytic filter and a second portion functioning as an adsorbent. "In this example of an experiment, the honeycomb body of the same fiber ceramics as 4a and 200 ml were used for the substrate 4b. paragraph 10, lines 10-12, Shiga et. al. Also, Fig. 1 of Shiga et al. clearly shows a single filter unit having a single substrate with no space therebetween providing both the photocatalytic and adsorbtion filtration.

However, the Examiner asserts that since the filter in Shiga et al. may have a zeolite or activated carbon material in a downstream portion of the photocatalytic unit that the currently claimed invention is obvious. The

Examiner has combined these references with improper hindsight reasoning. See MPEP § 2145, paragraph X.A. Applicants are currently claiming "at least one air cleaner unit" having "at least one photocatalytic oxidation unit[[s]]; and first and second discrete adsorbent units; wherein said first adsorbent unit includes a first adsorbent material having a first isotherm curve for said pollutant, said first adsorbent unit being in flow communication with said interior air space having said pollutant, wherein said second adsorbent unit includes a second adsorbent material having a second isotherm curve for said pollutant, wherein said second isotherm curve is steeper than said first isotherm curve; wherein said at least one photocatalytic oxidation unit is spaced from and located downstream from said first adsorbent unit and spaced from and located upstream from the second adsorbent unit;" There is no teaching or suggestion in Say et al. or Shiga et al. for the filter unit having the combination of at least three discrete spaced units each designed to remove the same contaminant(s) and the first and second adsorbent units having different isotherms as claimed. The Examiner has clearly used improper hindsight reasoning to select and piece together components in the prior art in an attempt to make the claimed combination of filter units obvious.

For the above reasons, Applicant respectfully submits that the combination of Say et al. and Shiga et al. does not teach or fairly suggest the subject matter of claim 1, as currently amended, nor any of the claims that dependent on claim 1. Reconsideration and withdrawal of the rejection of claims 1, 9-13 and 17-19 and 65 under 35 U.S.C. 103(a) based on Say et al. and Shiga et al. is requested.

Ogata et al. ( US 6,531,100)

Ogata et al. teaches a particular structure for supporting a photocatalyst. But, there is no teaching or disclosure of a structure of an air quality system in

Ogata et al. Claim 9 on the other hand, because of its dependency on claim 1, defines a novel and unobvious air quality system, including a specific structure of an air quality system.

For the above reason, Applicant respectfully submits that Ogata et al. does not teach or fairly suggest the subject matter of claim 9. Reconsideration and withdrawal of the rejection of claim 9 under 35 U.S.C. 103(a) based on Ogata et al. is requested.

## CONCLUSION

Reconsideration and withdrawal of the Office Action with respect to claims 1, 9-13, 17-19 and 65 is requested. Applicant submits that claims 1, 9-13, 17-19 and 65 are now in condition for allowance. Early notice to that end is earnestly solicited.

In the event that the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment to Deposit Account No. 50-0851.

Respectfully submitted,

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